

Teaching with the “Big Ideas”

According to Jay McTighe and Grant Wiggins in their Understanding by Design model, enduring understandings refer to getting at the big ideas, or important understandings “that we want students to ‘get inside of’ and retain after they’ve forgotten many of the details. Put differently...[the big ideas and understandings] implicitly answer the question, Why is this topic worth studying?”

In Core Content for Assessment, v.4 (CCA v.4), content standards are organized around ‘big ideas’ in order to provide a cognitive framework for understanding. They include:

- Structure and Transformation of Matter
- Motion and Forces
- The Earth and the Universe
- Unity and Diversity
- Biological Change
- Energy Transformations
- Interdependence

The big ideas were selected to help promote transfer of learning from year to year. The American Association for the Advancement of Science (AAAS) Project 2061 Science for All Americans document provided the foundation for establishing our big ideas.

Current brain research suggests that by organizing information into a conceptual framework, greater ‘transfer’ is facilitated. Further, in How People Learn (National Research Council, 2000), one of the key factors which distinguishes ‘expert’ learners from ‘novices’ is the ability to organize or chunk thinking around big ideas. This ability allows more efficient retrieval of prior knowledge, as well as more efficient ‘mental filing’ of new information. Therefore, if we are truly interested in helping students to **understand**, we must be intentional in helping them to construct their own mental ‘storage and retrieval’ systems—which means that we, as teachers, must seek to learn about and implement megacognitive strategies that students can use to facilitate their meaning-making or understanding.

Introductions have been developed for each of the 7 big ideas in CCA v. 4. Using the context provided within those, along with the specific content standards for your grade level, should be the basis for establishing the ‘enduring understandings’ for your courses/units.

Enduring understandings can be considered important ‘generalizations’ or the ‘moral of the story’ for course/units. They should enable students to make connections within and among disciplines. Examples include things like:

- Objects remain in motion at a constant velocity if no force acts on them. (Motion and Forces)
- Living organisms have developed adaptive mechanisms to enable them to survive harsh or changing environments. (Interdependence)
- Standardized measures allow people to more accurately describe the physical world. (Structure and Transformation of Matter)

From Understanding by Design

Enduring understandings cannot be ‘memorized’—students must engage in a variety of activities in order **to come to understand** them. Evidence of understanding, then, would be demonstrated by the students’ ability to explain, interpret, analyze, apply and evaluate them.

You can read *Science for All Americans* and *Benchmarks for Science Literacy* at:
<http://www.project2061.org/>

(Click on “publications” on the left bar, and then on the titles)

You can read *How People Learn: Brain, Mind, Experience, and School* in full at:
<http://books.nap.edu/html/howpeople1/>